CLAIMS

What is claimed is:

1. A countermeasure system, comprising:

a base;

a launch tube interconnected with said base, wherein said launch tube is rotatable relative to said base; and

a reference axis that extends along a length of and through said launch tube, wherein said launch tube is rotatable about said reference axis.

2. A countermeasure system, as claimed in Claim 1, wherein:

said reference axis is fixed in a substantially vertical orientation.

3. A countermeasure system, as claimed in Claim 1, further comprising:

a servo motor interconnected with said launch tube.

4. A countermeasure system, as claimed in Claim 3, wherein:

at least a portion of said base is disposed between said servo motor and said launch tube.

5. A countermeasure system, as claimed in Claim 1, further comprising:

an outer tube, wherein at least a portion of said launch tube is disposed within said outer tube, and wherein said reference axis extends along a length of said outer tube.

6. A countermeasure system, as claimed in Claim 5, wherein:

said outer tube is substantially immobile relative to said base.

7. A countermeasure system, as claimed in Claim 5, wherein:

said launch tube is rotatable within and relative to said outer tube.

8. A countermeasure system, as claimed in Claim 1, further comprising:

a countermeasure cartridge, wherein at least a portion of said counter measure cartridge is disposable within said launch tube.

9. A countermeasure system, as claimed in Claim 8, wherein:

one of said countermeasure cartridge and said launch tube comprises a protrusion, wherein another of said countermeasure cartridge and said launch tube comprises a groove complimentarily configured to accommodate said protrusion, and wherein a length of said groove is substantially parallel to said reference axis at least when said countermeasure cartridge is disposed within said launch tube.

10. A countermeasure system, as claimed in Claim 8, wherein:

at least one of said countermeasure cartridge and said launch tube comprises means for providing a zero-twist rifling of said countermeasure cartridge relative to said launch tube.

11. A marine vessel that comprises a countermeasure system, said countermeasure system comprising:

a base;

a launch tube interconnected with said base;

a countermeasure cartridge, at least a portion of which is disposable within said launch tube; and

a rotation inhibitor for substantially preventing rotation of said countermeasure cartridge relative to said launch tube at least when said countermeasure cartridge is disposed within said launch tube.

12. A marine vessel, as claimed in Claim 11, wherein:

said rotation inhibitor comprises a guide key associated with said launch tube, and a keyway defined in said countermeasure cartridge, wherein said keyway is complimentarily configured to accommodate said guide key.

13. A marine vessel, as claimed in Claim 12, wherein:

said guide key is movable between at least first and second positions, wherein said first position comprises being disposed within said keyway, and wherein said second position comprises being dissociated from said keyway.

14. A marine vessel, as claimed in Claim 13, wherein:

a guide key positioner for moving said guide key between said first and second positions.

15. A marine vessel, as claimed in Claim 14, wherein:

said guide key positioner comprises a key ramp disposed toward an end of said keyway most remote from a nose of said countermeasure cartridge.

16. A marine vessel, as claimed in Claim 11, wherein:

said rotation inhibitor comprises a guide key associated with said countermeasure cartridge, and a keyway defined in said launch tube, wherein said channel is complimentarily configured to accommodate said guide key.

17. A marine vessel, as claimed in Claim 11, wherein:

said rotation inhibitor comprises a zero-twist rifling feature.

18. A marine vessel, as claimed in Claim 11, wherein:

said countermeasure cartridge and said launch tube each comprise portions of a digital data link.

19. A marine vessel, as claimed in Claim 11, wherein:

said countermeasure cartridge comprises at least one supplemental thruster disposed toward a nose of said countermeasure cartridge.

20. A marine vessel, as claimed in Claim 11, wherein:

said countermeasure cartridge comprises an onboard gyroscopic stabilization system.

21. A marine vessel, as claimed in Claim 11, further comprising a vessel reference axis that extends between a fore end and an aft end of said marine vessel, wherein said launch tube comprises a vertically oriented tube reference axis that is substantially perpendicular to said vessel reference axis, and wherein at least said launch tube is rotatable about said tube reference axis relative to a remainder of said marine vessel.

22. A marine vessel, as claimed in Claim 21, wherein:

said countermeasure system is rotatable about said tube reference axis relative to a remainder of said marine vessel.

23. A marine vessel, as claimed in Claim 11, wherein:

said countermeasure system is disposed below an uppermost deck of said marine vessel.

24. A marine vessel, as claimed in Claim 11, further comprising:

at least one pitching mechanism for affecting a pitch-over of said countermeasure cartridge relative to a longitudinal reference axis of said launch tube.

25. A marine vessel, as claimed in Claim 24, wherein:

said at least one pitching mechanism is selected from the group consisting of canards, thrusters, thrust vector control vanes, and combinations thereof.

26. A method of using a countermeasure system, the method comprising the steps of:

rotating at least a launch tube of a countermeasure system;

affecting a launch azimuth of a countermeasure cartridge of said countermeasure system using said rotating step; and

launching said countermeasure cartridge from said launch tube.

27. A method, as claimed in Claim 26, further comprising:

providing predetermined flight parameters to said countermeasure cartridge prior to said launching step.

28. A method, as claimed in Claim 27, wherein:

said rotating, affecting, launching, and providing steps all occurring within no more than about 2.0 seconds.

29. A method, as claimed in Claim 26, wherein:

said rotating step comprises rotating said countermeasure system relative to a remainder of a marine vessel with which said countermeasure system is associated.

30. A method, as claimed in Claim 26 wherein:

said rotating step comprises rotating a plurality of launch tubes of said countermeasure system.

31. A method, as claimed in Claim 30, wherein:

said rotating step comprises rotating at least a first launch tube more or less than a second launch tube of said countermeasure system.

32. A method, as claimed in Claim 31, wherein:

said affecting step comprises a first launch azimuth of a first countermeasure cartridge associated with said first launch tube being different than a second launch azimuth of a second countermeasure cartridge associated with said second launch tube.

33. A method, as claimed in Claim 26, further comprising:

pitching said countermeasure cartridge to a predetermined angle at at least one of a predetermined time and a predetermined distance from said launch tube, said pitch step occurring after said launching step.

34. A method, as claimed in Claim 26, further comprising:

deploying a payload of said countermeasure cartridge at at least one of a predetermined time and a predetermined distance from said launch tube, said pitch step occurring after said launching step.

35. A method, as claimed in Claim 34, further comprising:

controlling at least one of a roll, pitch, and yaw of said countermeasure cartridge at least between said launching step and said deploying step.

36. A method, as claimed in Claim 35, wherein:

said controlling step is accomplished, at least in part, through employment of an onboard gyroscopic stabilization system of said countermeasure cartridge.

37. A method of using a countermeasure system, the method comprising the steps of:

conveying at least one electrical signal indicative of at least one predetermined flight parameter from a marine vessel control center to a control module of a launchable countermeasure cartridge;

launching said countermeasure cartridge in a substantially vertical direction after said conveying step; and

pitching an initial vertical flight path of said countermeasure cartridge employing said at least one predetermined flight parameter.

38. A method, as claimed in Claim 37, wherein:

said pitching step occurs at a predetermined time in a flight of said countermeasure cartridge.

39. A method, as claimed in Claim 37, wherein:

said pitching step occurs within a predetermined time range in a flight of said countermeasure cartridge.

40. A method, as claimed in Claim 37, wherein:

said pitching step occurs at a predetermined point of a flight path of said countermeasure cartridge.

41. A method, as claimed in Claim 37, wherein:

said pitching step occurs within a predetermined range of a flight path of said countermeasure cartridge.

42. A method, as claimed in Claim 37, wherein:

said pitching step comprises pitching said initial vertical flight path of said countermeasure cartridge at a predetermined pitch angle relative to said initial vertical flight path.

43. A method, as claimed in Claim 37, further comprising:

employing an onboard timing device to at least assist in said pitching step.

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